

ABSTRACT

An object of the present invention is to provide a simple and easy process for producing optically active alcohols, specifically, a (R)-3-hydroxypentanenitrile, optically active 3-hydroxybutanoic esters, and optically active 1-phenylethanol derivatives, and to provide a novel enzyme useful for producing the above optically active alcohols, particularly a (R)-3-hydroxypentanenitrile.

The present invention provides a novel acetoacetyl-CoA reductase capable of asymmetrically reducing a 3-ketopentanenitrile to produce a (R)-3-hydroxypentanenitrile having an optical purity of 99%e.e. or more; and a process for allowing the novel enzyme or a known acetoacetyl-CoA reductase to act on each of the 3-ketopentanenitrile, an acetoacetic ester, and a 1-phenylethanone derivative to produce a corresponding optically active alcohol.